UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/980,122	04/05/2002	Thomas Becker	420/50547	8262

23911 7590 07/16/2003

CROWELL & MORING LLP
INTELLECTUAL PROPERTY GROUP
P.O. BOX 14300
WASHINGTON, DC 20044-4300

EXAMINER	
HE, AMY	
ART UNIT	**PAPER NUMBER**
2858	

DATE MAILED: 07/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/980,122	BECKER ET AL.	
	Examiner	Art Unit	
	Amy He	2858	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 April 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Pri rity under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *5,7* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 21-23, 32-34, and 38-45 are rejected under 35 U.S.C. 102(b) as being anticipated by Forster et al. (U. S. Patent No. 4, 627, 269).

Referring to claim 21, Forster discloses a semiconducting gas sensor (100 in Figure 1) comprising:

a gas-sensitive layer (11) whose electrical conductivity can be varied by contact with a gas;

a heater (10) for heating the layer to a predefined measuring temperature (column 11, lines 3-4);

contact electrodes (12) for measuring the electrical resistance or the conductivity of the gas-sensitive layer (column 11, lines 20-22); and

a chamber (7) in which the gas-sensitive layer is arranged; wherein,

a valve arrangement (161-165) is provided to seal the chamber from the outside and keep it closed during the measurement process, whereby during measurement a limited supply of individual gases in the chamber is at least partially converted (column 31, lines 5-9 and 32-36; column 18, lines 31-34); and

volume of the chamber (7) is such that at least one component of a limited gas store within the chamber is substantially exhausted via conversion within a predetermined measuring interval(column 12, lines 10-14; column 31, lines 5-9 and 32-36).

Referring to claim 22, Forster discloses a device (95 in Figure 1) for regulating heating of the gas-sensitive layer in stages whereby individual components of the gas can be selectively converted at predetermined measuring temperature.

Referring to claim 23, Forster discloses that the gas sensor (100 in Figure 1) is produced using micromechanical technology.

Referring to claims 32-34, Forster discloses that the chamber (7 in Figure 1) possesses a volume of 0.1cm.sup.3 (column 18, lines 53-54).

Referring to claim 38, it is the methods claim corresponding to the rejected apparatus claim, claim 21, it is rejected for the same reasons as stated above for the rejection of the apparatus claim.

Referring to claims 39-45, Forster discloses the method in accordance with claim 38, wherein

the measurement is used for at least two different times to determine the gas components(see Figure 9);

the concentration of at least one gas is determined from a maximum peak of the measuring signal and a subsequent drop thereof (column 15, lines 50-55; column 32, lines 1-3);

the measuring temperature (50 or 350 degree, column 15, lines 63-65) lies within a range of 20 to 550 degree, 50-400 degree and 200-400 degree;

heating is gradual and the measurements are taken at different measuring temperature (50 or 350 degree, column 15, lines 63-65).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 24-31, 35-37 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Forster et al. (U. S. Patent No. 4, 627, 269), in view of B. Ruhland, et al. ("*Gas-kinetic interactions of nitrous oxides with SnO_2 surfaces" sensors and Actuators*, B 50 (1998) pages 85-94).

Referring to claims 24-31, Forster discloses the semiconducting gas sensor as in claim 21. Forster does not discloses the heater made of platinum heating resistor arranged in a meandering pattern; a passivating layer made of SiO_2 positioned between the heater and the gas-sensitive layer; the contact electrodes made of platinum; the substrate made of silicon, a nitride membrane which separates the heater from the carrier; the gas-sensitive layer made of SnO_2; and measuring concentrations of CO, NO_2 and NO; and the chamber made of silicon.

B. Ruhland discloses a heater made of platinum heating resistor arranged in a meandering pattern; a passivating layer made of SiO_2 positioned between the heater and the gas-sensitive layer; contact electrodes made of platinum; a silicon substrate as a carrier and a nitride membrane which separates the heater from the carrier; a gas-sensitive layer made of S_nO_2; and measuring concentrations of CO, NO_2 and NO; and a chamber made of silicon (page1, experimental details column; Figure 1).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Forster to use a platinum heating resistor; a passivating layer of SiO_2; a platinum contact electrode; a silicon substrate as a carrier, a nitride membrane; a gas-sensitive layer made of S_nO_2; CO, NO_2 and NO as the gases; and a silicon chamber, as taught by B. Ruhland, since it has been held to be within the general skill of a worker in the art to select a known tool for a known purpose on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin,* 227 F.2d 197, 125 USPQ 416 (CCPA).

Referring to claims 35-37 and 46, Forster discloses a semiconducting gas sensor (100 in Figure 1) as in claim 21 and line for the inlet and outlet of gas via a valve arrangement of individually controllable valves (161-165 in Figure 1). Forster does not disclose a plurality of semiconducting gas sensors arranged in a parallel connection. B. Ruhland discloses a plurality of gas sensors arranged in a parallel connection (see Figure 1b). A person of ordinary skill in the art would find it obvious to modify Forster to use a plurality of gas sensors arranged in parallel, as taught by B. Ruhland, in order to

obtain a certain degree of selectivity towards a plurality of gases of different measuring temperatures.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy He whose telephone number is (703) 305-3360. The examiner can normally be reached on 8:30am-5pm Monday through Friday.
If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, N. Le can be reached on (703) *308-0750*.

The official Fax numbers for the organization are (703-872-9318) Before-Final and (703-872-9319) After-Final Office actions. Any inquiry of a general nature relating to this application should be directed to the receptionist at (703) 305-4900.

AH
July 10, 2003

WALTER E. SNOW
PRIMARY EXAMINER